

WHAT IS CLAIMED IS:

sub A1

1. A light-emitting apparatus comprising:
a primary light source including a semiconductor
light-emitting device with an emission wavelength of from 380
5 nm to 500 nm; and
a secondary light source including a fluorescent material
composed of ZnS:Cu, Au, Al;
wherein said secondary light source emits light based
on light given from said primary light source so that light
10 of said secondary light source and the light of said primary
light source are mixed together to thereby generate light
different in luminescent color from the light emitted from said
primary light source.

sub 1000

15 2. A light-emitting apparatus according to claim 1,
wherein said fluorescent material is dispersed into a first
layer composed of a light-transmissible material,
a part of the light emitted from said primary light source
is transmitted through said first layer, and
20 the other part of the light emitted from said primary
light source is absorbed by said fluorescent material so that
said fluorescent material emits light and the light emitted
from said fluorescent material and the light emitted from said
primary light source are mixed together to thereby generate
25 light different in luminescent color from the light emitted

from said primary light source.

3. A light-emitting apparatus according to claim 2,
wherein said first layer comprises at least one member selected
5 from the group consisting of epoxy resin, silicone resin, urea
resin and glass.

4. A light-emitting apparatus according to claim 2,
wherein said light-emitting device is fixed to a cup portion
10 of a lead frame, and said first layer is formed so that said
light-emitting device fixed to said cup portion is covered with
said first layer.

5. A light-emitting apparatus according to claim 4,
15 wherein a sealing member is provided so that said light-emitting
device, said first layer and a part of said lead frame are covered
with said sealing member.

6. A light-emitting apparatus according to claim 5,
20 wherein said sealing member is composed of at least one member
selected from the group consisting of epoxy resin, silicone
resin, urea resin and glass.

7. A light-emitting apparatus according to claim 5,
25 wherein said sealing member is shaped like a bullet.

8. A light-emitting apparatus according to claim 2,
wherein an amount of said fluorescent material changes
continuously or stepwise as location of said fluorescent
material in said first layer comes nearer said light-emitting
device.

9. A light-emitting apparatus according to claim 5,
wherein said first layer and said sealing member are composed
of the same material.

10. A light-emitting apparatus according to claim 2,
wherein said light-emitting device is of a chip type, and
said first layer is formed so as to cover said light-emitting
device.

11. A light-emitting apparatus comprising:
a primary light source including a semiconductor
light-emitting device with an emission wavelength of from 380
nm to 500 nm; and
20 a secondary light source including a fluorescent material
composed of at least one member selected from the group
consisting of ZnS:Eu, YVO₄:Ce and Y₂O₂S:Ce;
wherein said secondary light source emits light based
on light given from said primary light source so that light
25 of said secondary light source and the light of said primary

light source are mixed together to thereby generate light different in luminescent color from the light emitted from said primary light source.

5 12. A light-emitting apparatus according to claim 11,
wherein said fluorescent material is dispersed into a first
layer composed of a light-transmissible material,
a part of the light emitted from said primary light source
is transmitted through said first layer, and
the other part of the light emitted from said primary
light source is absorbed by said fluorescent material so that
said fluorescent material emits light and the light emitted
from said fluorescent material and the light emitted from said
primary light source are mixed together to thereby generate
15 light different in luminescent color from the light emitted
from said primary light source.

Surf 12

13. A light-emitting apparatus according to claim 12,
wherein said first layer comprises at least one member selected
20 from the group consisting of epoxy resin, silicone resin, urea
resin and glass.

14. A light-emitting apparatus according to claim 12,
wherein said light-emitting device is fixed to a cup portion
25 of a lead frame, and said first layer is formed so that said

light-emitting device fixed to said cup portion is covered with said first layer.

15. A light-emitting apparatus according to claim 14,
5 wherein a sealing member is provided so that said light-emitting device, said first layer and a part of said lead frame are covered with said sealing member.

16. A light-emitting apparatus according to claim 15,
10 wherein said sealing member is composed of at least one member selected from the group consisting of epoxy resin, silicone resin, urea resin and glass.

17. A light-emitting apparatus according to claim 15,
15 wherein said sealing member is shaped like a bullet.

18. A light-emitting apparatus according to claim 12,
wherein an amount of said fluorescent material changes
continuously or stepwise as location of said fluorescent
20 material in said first layer comes nearer said light-emitting device.

19. A light-emitting apparatus according to claim 15,
wherein said first layer and said sealing member are composed
25 of the same material.

Sub

20. A light-emitting apparatus according to claim 12, wherein said light-emitting device is of a chip type, and said first layer is formed so as to cover said light-emitting device.

5

Sub

AO

21. A light-emitting apparatus comprising:
a first light source including a semiconductor light-emitting device for emitting blue light;
a second light source including a first fluorescent material for absorbing light of said primary light source and emitting green light; and
a third light source for emitting red light;
wherein the light of said first light source, light of said second light source and light of said third light source are mixed together to thereby generate white light.

22. A light-emitting apparatus according to claim 21, wherein said first fluorescent material is composed of at least one member selected from the group consisting of ZnS:Cu, Au, Al; ZnS:Cu, Al; ZnS:Cu; ZnS:Mn; ZnS:Eu; YVO₄:Eu; YVO₄:Ce; Y₂O₂S:Eu and Y₂O₂S:Ce.

Sub

Ble

23. A light-emitting apparatus according to claim 21, wherein said third light source includes a second fluorescent material for absorbing the light of said first light source

Sub B
and emitting red light.

24. A light-emitting apparatus according to claim 23,
wherein said second fluorescent material is composed of CaS:Eu.

5

25. A light-emitting apparatus according to claim 21,
wherein said third light source includes a semiconductor
light-emitting device for emitting red light.

10

26. A light-emitting apparatus according to claim 21,
wherein said fluorescent material is dispersed into a first
layer composed of a light-transmissible material,
a part of the light emitted from said first light source
is transmitted through said first layer, and
the other part of the light emitted from said first light
source is absorbed by said fluorescent material so that said
fluorescent material emits light and the light emitted from
said fluorescent material and the light emitted from said first
light source are mixed together to thereby generate light
different in luminescent color from the light emitted from said
first light source.

15

20

25. A light-emitting apparatus according to claim 26,
wherein said first layer comprises at least one member selected
from the group consisting of epoxy resin, silicone resin, urea

resin and glass.

28. A light-emitting apparatus according to claim 26,
wherein said light-emitting device is fixed to a cup portion
5 of a lead frame, and said first layer is formed so that said
light-emitting device fixed to said cup portion is covered with
said first layer.

29. A light-emitting apparatus according to claim 28,
10 wherein a sealing member is provided so that said light-emitting
device, said first layer and a part of said lead frame are covered
with said sealing member.

30. A light-emitting apparatus according to claim 29,
15 wherein said sealing member is composed of at least one member
selected from the group consisting of epoxy resin, silicone
resin, urea resin and glass.

31. A light-emitting apparatus according to claim 29,
20 wherein said sealing member is shaped like a bullet.

32. A light-emitting apparatus according to claim 26,
wherein an amount of said fluorescent material changes
continuously or stepwise as location of said fluorescent
25 material in said first layer comes nearer said light-emitting

device.

33. A light-emitting apparatus according to claim 29,
wherein said first layer and said sealing member are composed
of the same material.

34. A light-emitting apparatus according to claim 26,
wherein said light-emitting device is of a chip type, and
said first layer is formed so as to cover said light-emitting
device.

Adt
Cut